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M E M O R A N D U M

To: **FOCUS: Tamworth File**

From: **Rath, Young and Pignatelli, Professional Association**

Date: **April 2, 2004**

Re: **CMI Motorsports Project**
Water Quantity Usage Calculation

I. Short Answer

Q: Whether Tamworth Motorsports Project will require more than 57,600 gallons per day based on reasonable water use assumptions

A: Yes, calculations of daily water usage assumptions based on the New Hampshire Department of Environmental Services regulations show the estimated daily water use of the Tamworth Motorsports Project will exceed 80,000 gallons per day, requiring further hydrologic evaluation and permitting requirements

II. Introduction and Background

CMI Motorsports (the "Developer") has filed a Joint Wetland Permit Application (the "Application") with the New Hampshire Department of Environmental Services ("DES") and the Army Corps of Engineers for the proposed motorsports project in Tamworth, New Hampshire (the "Project"). The Project is to be constructed using a phased approach, dividing the facilities to be built during Phase I and II of construction as follows:

Phase I:	**Phase II:**
✓ 10,000 sq. ft. administrative building ✓ 4,000 sq. ft maintenance building ✓ 10,000 sq. ft. auto repair and high performance tuning shop ✓ "Garagemahals" ✓ 2,000 sq. ft. race control building ✓ 50-seat grill-type restaurant	✓ 75-room hotel ✓ 300-seat restaurant ✓ 50-seat lounge ✓ Lower Clubhouse area: ▪ Locker room(with showers) ▪ 135 Garagemahals ▪ ~5,000 sq. ft. meeting/retail space ▪ 100-seat pub style restaurant ✓ East Side Area w/48 Garagemahals (as needed)

The Application states "the Project will require the development of a small community water system to meet the estimated water demand of approximately 56,000gallons per day (gpd)." *Valley Motorsports Park Project Joint Wetlands Permit Application*, p. 72, March 4, 2004. We do not believe that the daily water usage estimate of 56,000gpd is realistic for all of the uses proposed in the Application. Rather we would estimate a reasonable average daily usage for the project as described in the Application to be over 80,000gpd. As such, we review the anticipated daily water flow for the Project below. Calculations were made based on the limited information supplied in the Application, the New Hampshire Safe Drinking Water Act RSA 485, and daily water usage assumptions in Env-Ws 372.10 and Env-Ws 1008.03.

III. Analysis

The Application proposes water be supplied for the Project by a small public water system. Under RSA 485:1-a, a "Public Water System" is defined as

> a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Env-Ws 302.01(bg).

RSA 485:3 provides the threshold for rulemaking relative to groundwater withdrawals of 57,600 gallons or more in any 24-hour period by public water systems. Under DES rules, a Large Withdrawal is defined to include "any seasonal or year-long withdrawal from a wellhead installed after July 1998, not associated with a temporary, short term use such as contaminated site management or construction de-watering, where the maximum 24-hour withdrawal is 57,600 gallons or more." N.H. Admin. R. Env-Ws 387.02(k).

Large groundwater withdrawals of 57,600 gallons or more in a 24-hour period will either be classified as a Minor Large Groundwater Withdrawal or a Major Groundwater Withdrawal. A Large Withdrawal carries with it far greater potential for impact to groundwater flow and a negative effect on the general hydrologic regime of the surrounding area. Therefore, classification of a withdrawal as either Minor Large or Major is significant, and the permitting process is far more involved than that for a groundwater withdrawal of under 57,600 gpd.

Minor Groundwater Withdrawal

DES is required to designate a Large Groundwater Withdrawal as a Minor Large Withdrawal ("Minor Withdrawal") when:

(1) The maximum 24-hour withdrawal is at least 57,600 gallons;
(2) The maximum average-day withdrawal in a 30 day period is less than 144,000 gallons per day;
(3) Available information indicates that the withdrawal does not result in adverse impacts as defined in Env-Ws 388 to water resources and other water users identified in Env-Ws 387.07; and
(4) The withdrawal is not in a high use area as determined by the department.

N.H. Admin. R. Env-Ws 387.03(c).

Prior to applying for a Minor Withdrawal permit, the applicant must submit a request for such status in writing to DES. This request must include, among other things: a description of how the withdrawal meets the requirements identified in Env-Ws 378.03; a conservation Management plan and description of need; an estimate of the study area; the withdrawal testing program design; and a preliminary report for a community water supply system, all completed in compliance with their respective sections of Env-Ws 387. Additionally, as part of the designation process, DES will conduct a hydrologic evaluation to determine whether the withdrawal may be designated as minor. Once Minor Withdrawal designation is approved by DES, the applicant must then undergo the permitting process, which includes submission of complete withdrawal testing and the hydrologic evaluation by DES.

Major Groundwater Withdrawal

A Large Groundwater Withdrawal is considered Major where:

(a) The maximum average day withdrawal in a 30 day period is 144,000 gallons per day or more, and
(b) The maximum, 24-hour withdrawal is 57,600 gallons per day or more, but the maximum average day withdrawal in a 30 day period is less than 144,000 gallons per day and the department has denied, suspended, or revoked minor withdrawal designation under Env-Ws 387.

N.H. Admin. R. Env-Ws 388.03.

In order to obtain a permit for a Major Groundwater Withdrawal ("Major Withdrawal"), an applicant must undergo an extensive permitting process including developing the following: a conservation management plan and description of need; a conceptual hydrologic model of the withdrawal; a preliminary water resource and use inventory; an estimate of the effects of the withdrawal on water resources and uses; a withdrawal testing program with complete withdrawal testing results; and a description of the impacts to water resources and uses, all in accordance with the respective rules in Env-Ws 388.

IV. Calculations

Table 372-1 in Env-Ws 372.10 and Table 1008-1 in Env-Ws 1008.03 provide the daily flow volume estimates to be used in determining average flow per day for Public Water Systems. The proposed construction listed above has been divided into categories to simplify the estimates based on Env-Ws 372.10 and 1008.03. Those categories are: Office space, Hotel, Restaurant/Lounge facilities, Garagemahals, Auto Repair facilities and Club Facilities (locker room with showers and meeting/retail space). Each is analyzed separately below:

OFFICE SPACE

The anticipated design flow for unspecified office space is 15gpp (gallons per person) or 15gpd per 100sq. ft. of office space. The space for which the calculations below are made is not clearly "office space." The Application estimates the daily employee count for the motorsports part to be 40 (on a weekend day), but does not specify what type of employees and where they would be. Therefore, the anticipated flow estimate is based on the sq. ft. measurement, and is probably fairly conservative.

10,000 sq. ft. administrative building – The Application describes this space as an administrative building, including meeting rooms, in order to provide office space for the daily, year-round operation of the facility. This building is the only one, other than the hotel, that will be accessible without a membership ID card.

10,000sq. ft. x 15gpd/100sq. ft. = **1,500gpd**

4,000 sq. ft. maintenance building – The Application states that this building will serve as the base of operations for course clean up and safety crew members and vehicles and will house the course street sweeper, emergency response trucks, tow trucks, and other maintenance equipment.

4,000sq. ft. x 15gpd/100sq. ft = **600gpd**

2,000 sq. ft. race control building- This building is described in the Application as housing the course director and all necessary timing and scoring as well as the audio/visual equipment for the course and where all decisions regarding course use, start and stops, and incident responses are made.

2,000sq. ft. x 15gpd/100sq. ft = **300gpd**

TOTAL ANTICIPATED OFFICE SPACE USE = 2,400gpd

HOTEL

The total anticipated use for a hotel under Env-Ws 1008.03 is 200gpd/room, unless the plans specify that only one double bed can be accommodated in which case the estimate is 100gpd/room. The Application states that a 75-room hotel is planned for short or long-term stays by members. No mention of restrictions to 1 double bed are made. Therefore, the higher figure seems reasonable to use here.

Minimum	Maximum
75-rooms (double bed use only) x 100gpd/rm = 7,500gpd **TOTAL MIN USE = 7,500gpd**	*75 rooms x 200gpd/room = 15,000gpd* **TOTAL MAX USE = 15,000gpd**

TOTAL ANTICIPATED HOTEL USE = 15,000gpd

RESTAURANTS AND LOUNGES

The estimated daily flow volume for a "restaurant" under Env-Ws 1008.03 is as follows:

- 40gpd/seat for a restaurant with eat-in service, toilet facilities, and kitchen waste.
- 20pdg/seat if the restaurant uses paper service (rather than real plates, flatware, etc…)
- 20gpd/seat for bars and lounges
- 10gpd/seat for private country club dining rooms and snack bars

The Application states that, after completion of Phases I and II, the Project will have total a 100-seat pub style restaurant in the lower clubhouse area, a 300-seat restaurant and a 50-seat lounge within the hotel, and a 50-seat grill-type restaurant in the vicinity of the garagemahals and pit lane area.

Minimum[1]	**Maximum**
100 x 10gpd/seat = 1,000 (pub) 300 x 40gpd/seat = 12,000 (in hotel) 50 x 20gpd/seat = 1,000 (lounge) 50 x 20gpd/seat = 1,000 (grill) TOTAL MIN USE = 15,000gpd	100 x 40gpd/seat = 4,000 300 x 40gpd/seat = 12,000 50 x 20gpd/seat = 1,000 50 x 40 gpd/seat = 2,000 TOTAL MAX USE = 19,000gpd

As it would appear reasonable to assume that the 50-seat grill-type restaurant will not feature paper service, we have based our total estimated use on the minimums, except the grill, which we have included at the higher 40gpd.

TOTAL RESTAURANT/LOUNGE USE = 1,000 + 12,000 + 1,000 + 2,000 = 16,000gpd

Also, Table 1008-1 states that an additional 35gpd/employee should be added. This information is not available at this time. The Application states an estimate of 40 employees, which has been incorporated into these calculations.

40 employees x 35gpd/employee = 1,400gpd

TOTAL ANTICIPATED RESTAURANT/LOUNGE USE INCLUDING EMPLOYEES = 17,400gpd

[1] Calculated by reducing the 100-seat pub style restaurant to a "country club" dining room (10gpd rather than the 40gpd for a regular dine-in restaurant) and counting the 50-seat grill-type restaurant as a paper-service restaurant (20gpd rather than the 40gpd for a regular dine-in restaurant).

GARAGEMAHALS

These are described in the Application as multi-story structures with enclosed vehicle storage on the ground level and hotel or dorm style living facilities on the second and third floors. The purpose of these is to provide members with comfortable but basic accommodations for short duration stays. There is no mention of the size of the garagemahals, but based on the description, they are probably fairly small. In the Phase II plans, it is stated in the Application that 135 garagemahals will be built in the lower clubhouse area and 48 more as needed in the east area side. It would appear that a build-out of 183 units is expected.

Table 1008-1 provides the estimate for a 1-bedroom or studio apartment to be 225gpd/bedroom and for a 2+ bedroom apartment the measure should be 150gpd/bedroom. However, Table 372-1 lists "Recreational vacation homes" as using the measure of 150gpd/bedroom. The calculations have been made both under the 225gpd measurement and the 150gpd measurement for 1, 2, and 3 bedroom vacation homes. Due to the high numbers for 2 and 3 bedroom units, the assumption has been made that the plan is for the garagemahals to be studio or 1-bedroom units or a mix of 1 and 2 bedroom units.

1-Bedroom/studio	**Recreational Vacation Home**
183 units x 225gpd = 41,175gpd	1bdrm x 150gpd x 183units = 27,450gpd 2bdrms x 150gpd x 183 units = 54,900gpd 3bdrms x 150gpd x 183units = 82,350gpd
TOTAL GARAGEMAHAL USE = 1-bdrm - 27,450gpd → 41,175gpd 2bdrm - 54,900gpd 3bdrm - 82,350gpd	

In light of the broad range of 27,450gpd to 82,350gpd, a reasonable estimate is the figure for studio units at 41,175gpd.

TOTAL ANTICIPATED GARAGEMAHAL USE = 41,175gpd

SERVICE STATION FACILITIES

The Application stated that there is to be a two-story approximately 10,000sq. ft. auto repair and high performance tuning shop (the "Shop"). This Shop is anticipated to have 6 repair bays and will serve as the primary location for drivers and club members to bring their vehicles for repairs.

Table 1008-1 states that Service Stations must allow for an approximate flow per day of 75gpd/Island and 125gpd/bay, if any. It would not appear that the Shop would have any "Islands", as it is not going to store automotive fuel. Therefore, we use only the 6 repair bays at 125gpd each, totaling 750gpd.

TOTAL ANTICIPATED SERVICE STATIONS USE = 750gpd

CLUB FACILITIES

In addition to the 135 garagemahals and 100-seat pub style restaurant accounted for in their respective sections above, the lower clubhouse area is to have a locker room with showers (120 lockers) and 5000sq. ft. of meeting and retail space.

The "locker room" would probably be best categorized as private country club facilities, which under Table 1008-1 estimates 20gpd/locker daily water flow for locker and shower areas.

TOTAL SHOWER/LOCKER USE = 120 Lockers x 20gpd = 2,400gpd

The meeting and retail space estimated use is harder to calculate. Under Table 1008-1, function rooms can be estimated by using the measurement of 12gpd per patron. Retail space for dry goods is measured by an average flow of 5gpd/100sq. ft. We don't know the number of people the meeting space is meant to accommodate or the square footage of the retail space. We have used more conservative usage estimates for this calculation.

MEETING SPACE	RETAIL SPACE
50 patrons x 12gpd = 600gpd 100 patrons x 12gpd = 1200gpd 150 patrons x 12gpd = 1800gpd 200 patrons x 12gpd = 2400gpd APPROX MEETING USE = 600gpd → 2400gpd	1000sq. ft. x 5gpd/100sq. ft. = 50gpd 2000sq. ft. x 5gpd/100sq. ft. = 100gpd 3000sq. ft. x 5gpd/100sq. ft. = 150gpd APPROX RETAIL USE = 50gpd → 150gpd
APPROX TOTAL MEETING AND RETAIL SPACE USE = 650gpd → 2550gpd	

TOTAL ANTICIPATED MEETING AND RETAIL USE = 1,600gpd

COMBINED TOTAL ANTICIPATED CLUBHOUSE (LOCKER ROOM AND MEETING/RETAIL) USE = 4,000gpd

SUMMARY

Based on the information in the Wetlands Application submitted to DES, we believe the following is a reasonable calculation of the anticipated daily water use for the Tamworth Motorsports Project.

TYPE OF USE	REASONABLE ANTICIPATED DAILY FLOW
Administrative space	2,400gpd
Hotel	15,000gpd
Restaurant/Lounges	17,400gpd
Garagemahals	41,175gpd
Auto Repair Facilities	750gpd
Club Facilities	4,000gpd
TOTAL ANTICIPATED USAGE	**80,725gpd**